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ABSTRACT

This study of the market for media-based educational materials for preschool to high school through 1990 was commissioned to inform learning technologies professionals about the markets that show the greatest potential for their products in schools. Organized into five major sections, the executive summary discusses: (1) the current education market, i.e., curriculum content decision making and the market for educational materials; (2) demographic, social and political, economic, and technological trends that will affect the market for educational materials over the next 5 to 10 years; (3) an overview of projected effects of these trends; (4) a detailed analysis of the projected effects of trends; and (5) the most promising subjects for new productions. Nine subject areas are identified as potential markets for the future: bilingual education, basic skills and application, science education, social studies education, vocational and career education, preschool education, health and social issues education, fine arts education, and foreign language education. Five charts summarize market opportunities for public broadcasters by curricular area and target grade level for bilingual, science, social studies, vocational and career, and basic skills education. (JB)

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FUTURE SCHOOL MARKET FOR INSTRUCTIONAL PROGRAMMING AND SERVICES THROUGH 1990

EXECUTIVE SUMMARY

MARCH 1986

Corporation for Public Broadcasting

IR012207

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Summary of Market Opportunities for Public Broadcasters by Curricular Area & Target Grade Level

Bilingual Education -- Elementary
Science Education -- Junior High, High School
Social Studies Education -- Junior High, High School
Basic Skills -- Elementary
Vocational and Career Education -- Junior High, High School

FUTURE SCHOOL MARKET FOR INSTRUCTIONAL PROGRAMMING AND SERVICES THROUGH 1990

THE CURRENT EDUCATION MARKET

The Context and Organization of Education

- Public interest in the quality of education has been heightened by (1) reports by such prominent bodies as the National Commission on Excellence in Education; (2) declining test scores (which have begun to improve slightly recently); (3) concern over the quality and quantity of teachers; and (4) growing proportions of families without children in the schools who must provide financial support for public education.

- The percentages of revenues for education from federal and local sources have declined over the past decade, while the proportion of funds contributed by the states has increased.

  This shift has been accompanied by increases in state control and influence.

  States have taken the lead in implementing educational reforms, and education has risen to the top of state policy agendas.

- Although school districts' per-pupil expenditures have increased over the past five years, discretionary funds remain extremely limited.

- The enrollment decline of the past decade has ended at the elementary level, but will continue at the secondary level until the early 1990s.

- Private and parochial schools show great diversity nationwide, but are typically smaller, more homogeneous, and less bureaucratic than public schools.

- Preschool enrollments have become increasingly important in the education market, and have grown 83 percent since 1970. Currently, 38 percent of three and four year olds attend nursery school.

Current Curriculum Decisionmaking

- The public school curriculum is determined as much by non-educational as by educational organizations and as much at

the state and national levels as at the local level.

Textbooks determine in large part what is taught and how it is taught, provide the structure for two thirds to three fourths of all classroom time, and serve as one of the most powerful nationwide forces for curriculum standardization.

State textbook adoption practices limit curricular change and variety.

- Curriculum change is ordinarily slow and incremental, but is occasionally expedited by external influences and crises.

  The curriculum policymaking process has become increasingly complex, legalistic, centralized, and bureaucratic.

Current Curriculum Content

- Curriculum trends during the past few decades have reflected shifting emphasis between quality and equality. Currently, the emphasis is on "excellence."

- At the elementary level, most classroom time is devoted to English, language arts, and mathematics.

  Emphasis is on mastery of basic facts and skills.

  The elementary curriculum is fairly uniform nationwide.

- The secondary curriculum is driven by the comprehensive high school model within a six- or seven-period day, which results in a segmented, subject-oriented, time-limited, ability-grouped program.

- State-mandated high school graduation requirements have increased substantially in the 1980s, particularly in mathematics and science. As a result, secondary enrollments in core subject areas have increased.

- Student scores on aptitude and achievement tests are improving after steady declines in the 1960s and 1970s.

  National assessments indicate that students are performing better on basic skills, but worse on higher-order skills.

- School districts are encountering increasing difficulties in attracting adequate numbers of well-qualified teachers. These problems will be exacerbated in the near future by increases in teacher retirements and elementary enrollments.

Current Market For Educational Materials

- The market is characterized by a potentially large size, a distinction between buyers and users, fragmentation, concentration, and slow rates of response to user needs.

- The number of suppliers of educational materials has declined in the past five years, resulting in increasingly diverse product lines.

- Selection and purchasing processes at the local level vary by type of medium.

- Textbook sales have increased steadily in the past eight years and continue to dominate the instructional materials market.

  Although only a small part of total sales, audio-visual and microcomputer materials are growth areas for publishers.

- Four key variables influence the effective use of educational materials: relevance to the curriculum, convenience, quality, and cost.

- Filmstrip and software collections are typically held in schools, while video and film collections are held in district, county, and regional media centers.

- More audio-visual materials are available per student at the elementary level than at the secondary level.

- Media-based instructional materials are concentrated in a limited number of subject areas.

- Historically, the use of media-based materials has been low, and such materials have been used primarily to supplement textbooks.

  Teachers typically depend on textbooks to guide course organization and day-to-day lesson plans.

- Obstacles to increased use of media-based instructional materials include logistical, attitudinal, institutional, and financial barriers.

- Film and filmstrip projectors are the most widely available audio-visual equipment, followed by television receivers.

- VCR availability is increasing steadily but varies widely by state. (Quality Education Data reports the availability of

video equipment in schools increased dramatically from 31 percent in 1982-83 to 69 percent in 1984-85.)

- Microcomputer availability has grown rapidly in the past few years. (Quality Education Data reports schools with microcomputers increased from 37 percent in 1982-83 to 87 percent in 1984-85).

TRENDS THAT WILL AFFECT THE MARKET FOR EDUCATIONAL MATERIALS OVER THE NEXT FIVE TO TEN YEARS

Demographic Trends

- The population will age and become more ethnically diverse.
- An "echo boom", i.e., the children of the baby boomers will increase the school-aged population through the end of the century.
- The proportion of the population living in urban areas, where minority populations are concentrated, will continue to decline.
- Migration to the West and South will slow.

Social and Political Trends

- The traditional family structure will continue to be eroded by declining family size, growing numbers of single parents, dual-income families, and growing numbers of illegitimate children.
- Political decentralization and conservatism are likely to continue in the near future, supported by a growing satisfaction with government.

Economic Trends

- The economy will probably remain relatively stable in the near term.
- The transformation from labor-intensive to capital-intensive production and from a production-based economy to a knowledge- and information-based economy will continue to alter the labor needs of American business.
- The number of affluent households will increase and the number of low-income households will decline by 1995 if GNP growth rates exceed those of the past ten years.

Technological Trends

- Telecommunications, computer, audio, and video systems will become increasingly integrated and powerful.

- Individuals' access to information technologies will be increased by lower prices, increased portability, and easier operating languages and methods.

PROJECTED EFFECTS OF TRENDS -- OVERVIEW

This section presents how the trends described above will affect the context and organization of education, curriculum decisionmaking and content, the needs of learners and intermediaries, and the market for media materials in schools and the home. For your convenience, this section begins with an overview of the projected effects of trends which is followed by more detailed analyses.

The Overall Context Of Formal Education Will Change Little In The Coming Decade.

- Schools will remain the principal source of formal education for children and young adults.

  - Public schools will educate the vast majority of students in elementary and secondary grades.

  - The opportunities for informal education in the home will increase as the public's access to information technologies increases.

- The traditional instructional format used by teachers in schools will probably not change significantly.

  - Financial and institutional obstacles will inhibit any radical departures from reliance on "teacher talk" and heavy use of textbooks prevalent in today's schools.

- A shortage of teachers that could last throughout the next decade will probably lower the quality of teachers hired.

  - Projections for the supply and demand of elementary and secondary teachers are highly uncertain, but spot shortages in math, science, bilingual, and special education are already developing.

- Districts are more likely to respond to shortages by lowering certification and teaching standards than by raising salaries to attract more individuals into the profession.

Increases In Preprimary And Elementary Enrollments During The Next Decade Will Reflect The "Echo Boom."

- Preprimary and elementary enrollments will increase, while secondary enrollments decline.
- Nonpublic school enrollments will increase faster than public school enrollments.
- The most recent National Center for Education Statistics (NCES) forecasts of preprimary through 12th grade enrollments in public and nonpublic schools through 1993 are summarized in the following table:

Preprimary through 12th Grade
Estimated Average Annual Growth Rates
1985-1993

School Type	Preprimary*	K-8	9-12	K-12
Public	1.5%	1.7%	-1.2%	0.8%
Nonpublic	2.3	1.6	-0.9	1.1
All	1.9	1.7	-1.1	0.9

*Children aged 3-6 in school
Source: Derived from NCES, 1985

State Legislatures And Education Agencies Will Play An Increasingly Influential Role In Educational Funding And Policy Issues.

- Education reform will probably be primarily rhetorical at the federal level as the individual states assume a growing share of the financial burden of education.
  - State-level educational reform legislation passed within the past few years will enlarge the states' educational bureaucracies and influence.
    - The states will become increasingly involved in determining an appropriate balance between equity and excellence in schools.
  - The federal government will continue to favor defense and selected social issues over education.
  - The discretionary spending of local school districts probably will be curtailed.
- As state legislators and administrators exert more influence over the curriculum through legislation and regulation, the parents of the "echo boom" children and a growing minority population will also become more demanding of the educational system.

External Forces Will Guide Curriculum Taught In Most Elementary And Secondary Schools With Continued Emphasis On Core Academic Subjects And Basic Skills.

- The substance of formal education in schools probably will continue to be driven by social, political, and economic forces, rather than by educational research.
- An emphasis on basic skills probably will continue, although the definition of what constitutes a basic skill may expand to include critical thinking, analytical skills, and problemsolving.
  - Institutional obstacles such as teachers' avoidance of open-ended topics and controversial issues, the lack of appropriate materials, and resistance at state and local administrative levels could limit basic skills education to a narrow range of topics and teaching techniques.
- English and the language arts will continue to dominate

the curriculum, but emphasis on mathematics, science, and possibly foreign languages, may be increased within the next five years.

The Needs Of Learners And Intermediaries Will Be Affected By Various Demographic, Social, Political, Economic And Technological Trends.

- Learners will face significant challenges in the future.
  - A growing majority of children are confronted with emotional stresses caused by the changing structure of American families.
  - The growing ethnic diversity of the country has created an increasing need for bilingual and intercultural education.
  - As the economy evolves from a manufacturing-based system to an information-based system, the educational requirements of the labor market will change.
  - Technology will provide students with expanded access to information, creating a need for instruction in the responsible selection and use of information.
- Intermediaries (teachers, schools, and the states) will need creative solutions in planning for the equitable and efficient use of technology in an increasingly pluralistic society.
  - Teachers and administrators will need thorough training in the use of information technologies for instruction and administration.
  - State departments of education will need to address the growing issue of inequity in student access to information and technology.

The Market For Educational Materials Will Continue To Be Dominated by Textbooks and Print Media, With Information Technologies And Nonprint Media Serving A Growing, Though Supplemental, Role.

- Schools will obtain more computers, but even more videocassette recorders and players.
  - Computers probably will be used more as tools for problem solving and course administration than for direct instruction.

- Films and filmstrips will retain a large share of the audio-visual market, but increased use of VCRs will assume part of this market.

- The increased use of videocassettes will also mean a decline in the use of broadcast and cable television as a direct instructional tool, although indirect use of televised programming could increase through videocassette recording for playback at a later time.

- The introduction of artificial intelligence systems, videodisc, and interactive videodisc systems will be limited during the next five years by cost and few available software programs.

- The risk of technical obsolescence will be a powerful limiting factor on the use in schools of any technology that does not already have a substantial base in homes.

- The overall structure of the market for educational materials probably will remain essentially unchanged.

  - The major markets for materials will remain concentrated in a few states and large school districts.

  - Textbook publishers will continue to dominate the marketplace as they broaden their product lines into nonprint materials to supplement their text series.

PROJECTED EFFECTS OF TRENDS -- DETAILED ANALYSES

Context of Education

Formal Education Will Be Dominated By Schools, But Opportunities For Informal Education Will Grow.

- The school is almost certain to remain the principal source of formal education for children under 18 during the next ten years.
  - Within the formal school structure, public elementary and secondary schools will continue to educate nearly 90 percent of America's children.
- Informal education at home will become increasingly important during the next decade, yet remain supplemental to formal education in schools.
  - Information technologies allowing greater individual access to information will provide more opportunities for children to be exposed to new and more varied ideas, cultures, places, and people.
    - Broader access and exposure may have negative as well as positive consequences, since media that carry high-quality programming can also carry inappropriate or even harmful programming for children.
    - Access to the new information technologies in the home will probably be limited initially to more affluent households.
  - Learning through computers or video will be supplemental to lessons taught in schools except for a small number of students participating in distance-learning programs.
    - Distance learning is more often used for post-secondary education in specific courses, not a full curriculum.

The Supply Of Qualified Teachers Will Continue To Dwindle, Although Traditional Teaching Formats Will Endure.

- The supply of new teachers entering the job market may be significantly lower than the demand for new elementary and secondary teachers for the next several years.

- NCES predicts shortages of 78,000 new teachers by 1993, as shown in the following table:

Forecast of New Teacher Shortages

	Year		
	1985	1990	1993
Estimated New Teacher Demand	158,000	188,000	211,000
Estimated New Teacher Graduates	146,000	139,000	133,000
Estimated Shortage	12,000	49,000	78,000
Demand For New Elementary Teachers As A Percentage Of Total New Teacher Demand	61%	72%	59%

Source: The Condition of Education, 1985

  - Low teacher-hiring levels during the 1970s and a predicted increase in teacher retirements will contribute to the shortage.

  - The shortage will be particularly acute in the elementary grades until 1990.

  - The estimated number of new teacher graduates is based on projections that 14 percent of college graduates will enter teaching, down from 34 percent in 1970.

  - The supply and demand of teachers is affected by many demographic and economic variables that result in a low level of certainty in these estimates, a point acknowledged by NCES.

- If the demand for new teachers exceeds supply, salaries could rise to attract more prospective teachers, possibly reversing a ten-year trend of declining real salaries for public elementary and secondary teachers.

  - A large reserve pool of certified and uncertified teachers who are not now teaching may be drawn into the profession if salaries increase and positions are available, but no data are available on the size of this pool.

- Informed observers predict that if funding does not increase, the short-term response to a teacher shortage will be the lowering of certification standards to attract more persons into teaching.

- Growing teacher shortages are expected in bilingual education, mathematics and science, regardless of changes in teacher salaries or certification standards.

- Technology will probably not be used as a substitute for teachers on a large scale during the next ten years.

- The traditional instructional format -- individual teachers working with classes of 20 to 30 students five to six hours a day for approximately six months a year -- will remain essentially unaltered during the next decade.

  - No alternative instructional arrangements appear likely to replace this format in the majority of schools.

    - Some states and districts may experiment with extended days or school years, but the essential structure of the school day will remain largely unchanged.

    - The system of fall and spring semesters with social promotions to the next higher grade probably will not change drastically during the next ten years.

  - A growing number of students, such as the "latch-key kids," may spend more time on school grounds as schools respond to the new needs of working parents, but this time will probably be used for recreational activities and informal learning through games and independent activities.

Organization of Education

<u>Federal Support For Education Will Continue To Decline, While State Support And Influence Increase.</u>

- The political conservatism expected to prevail through the late 1980s at the federal level of government indicates further declines in federal funding for education.

  - The declining role of the federal government as a source of school revenues is expected to continue as the emphasis on social security, defense, and deficit reductions remains high.

  - Attention to such issues as discipline and school

prayer may increase during elections, but the federal government is unlikely to supply the additional funds required to implement the reforms recommended by the National Commission on Excellence in Education (estimated by some to require as much as a 20 percent increase in per-pupil expenditures).

    - The current administration will probably offer rhetorical support to conservative political and religious groups who oppose "secular humanism" in public schools.

- State legislatures and departments of education, having assumed the largest share of the fiscal burden for public education, can be expected to exert more influence on educational policy issues.

    - Growing state involvement will increase the complexity of policy formulation.

        - The participation of additional specialists and administrators at the state level could increase the difficulty of reaching consensus and lengthen decisionmaking time as review panels and veto points proliferate.

    - Individual states will be faced with the difficult task of balancing the recent national emphasis on educational quality with continuing efforts to equalize educational opportunity.

        - In the late 1980s, much attention will be given to the difficult tasks of implementing the excellence in education reform legislation of the mid-1980s, monitoring new programs, and measuring results.

        - At the same time, the growing minority population could apply pressure to renew the emphasis on equality.

        - Although states will attempt a dual emphasis on improving quality and equality in schools, budget constraints will inevitably lead to compromises.

    - Increased state control of educational policy will probably lead to intrastate standardization of curriculum requirements, testing requirements, and programs, but the variance among states could broaden as demographic changes widen the differences among regions.

- State interest in educational reform could diminish if current reform efforts do not produce measurable results.

    - Local districts are still in the early stages of implementation, with the power to frustrate ill-conceived or poorly designed reforms.

- Several other factors could also affect the amount of state funds available for education.

    - The pending administration tax reform proposal would eliminate deductions for state and local taxes, putting pressure on states and local governments to lower their taxes or, at least, minimize increases.

    - On the other hand, the growing number of affluent families will increase the tax base for states that have state income and consumption taxes, increasing state funds available for education.

- A political backlash to the federal government's conservatism and low educational spending could develop during the late 1980s.

    - Such a backlash could halt the growth of state influence, but exacerbate sluggish decisionmaking and implementation by placing the federal government in competition with recently adopted state legislation, adding more federal bureaucratic involvement to an already complicated system.

<u>Public School System Enrollments And The Diversity Of The Student Population Will Increase</u>

- Total public school K-12 enrollments will increase by nearly 3 million by the early 1990s, as shown in Exhibit V-1.

    - Enrollment in public elementary grades (K-8) will increase by nearly 4 million students by 1993, as "echo boom" children enter the school system.

    - Secondary school enrollments will decline by 1.4 million by 1990 before increasing slightly during the early 1990s.

    - Between 1985 and 1993, total public school enrollments

will increase at an average annual rate of 0.8 percent as elementary enrollments increase 1.7 percent annually, and secondary enrollments decline 1.2 percent annually.

- The low and high population scenarios described in Chapter IV (Exhibit IV-2) in the full report would yield a decrease or increase of approximately 500,000 public school students in grades K-12 in 1990.

- The growing ethnic diversity of the U.S. population will be reflected in the schools.

  - Since 1970, the growth of minority enrollments in public elementary and secondary schools has been significant in many large cities, as shown in the following table:

Minority Public School Enrollments As A Percentage of Total Public School Enrollments

City	1970	1982
Boston, MA	35.8%	70.2%
Washington, DC	95.5	96.6
Chicago, IL	65.4	83.7
Atlanta, GA	68.7	92.2
Dallas, TX	42.7	74.0
Denver, CO	38.3	60.8
Los Angeles, CA	49.6	78.2
U.S. Average	20.9%	26.7*%

*1980 data

Source: NCES, 1985

  - More large urban school districts will have a majority of minority enrollments during the next decade as minority populations dominate metropolitan areas.

    - By 2000, 53 major U.S. cities will have a majority of minority populations.

- Enrollment growth in the ten largest enrollment states may vary considerably as some experience rapid population growth while others lose residents.

- Populations in California, Texas, and Florida will grow much faster than the national average, causing more rapid enrollment growth in these states as well.

- The following table shows the estimated percentage changes in total population and in high school graduates in the ten largest enrollment states:

Percentage Changes In Total Population And High School Graduates

State	Estimated Change In Total Population 1980-1990	Estimated Change In Total Population 1990-2000	Estimated Change In High School Graduates 1981-2000*
California	16.0%	11.2%	18%
Texas	22.5	18.5	49
New York	-6.5	-8.9	-28
Illinois	0.5	-2.7	-24
Ohio	-0.6	-3.8	-21
Pennsylvania	-1.4	-4.4	-28
Michigan	1.2	-2.0	-30
Florida	36.6	31.0	20
New Jersey	1.8	-1.1	-29
North Carolina	9.9	6.6	-12
U.S. Average	9.7	7.3	N/A

*Public and nonpublic graduates, except New Jersey and North Carolina, which include changes in public school graduates only.

Source: U.S. Bureau of the Census, 1985, and the College Board, 1984.

- Other states with projected high rates of growth in graduates by 2000 include Alaska (up 65 percent), Nevada (up 48 percent), and Utah (up 76 percent).

- States with sharp declines in anticipated graduates include the District of Columbia (down 51 percent), Massachusetts (down 35 percent), and Connecticut and Rhode Island (down 31 percent each).

Public School Expenditures Will Be Constrained During The Next Five Years, But Could Increase By 1995.

- Revenues for public and private education from all sources as a percentage of GNP will continue the decline begun in 1970 before increasing by 1995, as shown in the following table:

Revenues For Public And Private Education From All Sources As Percentage Of GNP

Year	Percentage Of GNP Spent On Education
1960	4.9%
1970	7.1
1980	6.5
1983	5.9
1990	5.3
1995	5.8

Source: Institute for the Future, 1985

  - As the "baby boom" generation passed through the school system during the 1960s, educational expenditures as a percentage of GNP rose 2 percent.

  - The entrance of the "echo boom" into the school system during the late 1980s and early 1990s is expected to yield similar, but less pronounced, results.

- Discretionary spending for school districts will probably decline during the next ten years as the local property tax base becomes relatively smaller.

  - The tax revolts of the 1970s slowed growth in property values, and an anticipated slowdown in housing starts during the coming decade will erode the local tax base for public services, including education, as depicted in the following table:

Erosion of Local Tax Base for Public Services Including Education

Year	Property Taxes As A Percentage Of All Taxes
1970	10.2%
1980	7.3
1984	7.1
1990	6.9
1995	6.7

Source: Institute for the Future, 1985

- Local tax revenues applied to education will face increasing scrutiny from an aging population more concerned about health and security than education.

- The variation in states' expenditures could widen as the demands and resources for education change with demography.

  - States with rapidly growing enrollments will have rising tax bases, but may have to divert more funds into capital expenditures for new buildings.

  - Schools in states with low population growth or declining enrollments may have less demand for capital expenses and, therefore, may have proportionately more money available for instruction.

  - Overall, public school revenues must grow by at least 5 percent in real terms to cover the increase in enrollments by 1990.

- Personnel budget requirements may also decline when a large number of older teachers at the high end of the salary scale retire and are replaced by new teachers at the lower end of the salary scale.

  - Because the possible teacher shortages could drive entry level salaries up, however, the net impact is difficult to ascertain.

  - If personnel costs decline, taxpayers may want the funds thereby saved used for other purposes, such as instructional materials and services, or they may

want to reduce overall education spending.

Private And Parochial School Enrollments Will Grow Slightly But Still Account For Only A Small Portion Of The Student Population.

- Enrollments in nonpublic elementary and secondary schools will grow slightly faster than public school enrollments, but still will account for only 13 percent of all elementary and secondary school students.
  - Nonpublic K-12 enrollment will increase at an average annual rate of 1.1 percent through 1993, compared with 0.8 percent for public schools.
    - Nonpublic elementary enrollment will increase at an average annual rate of 1.6 percent, compared with 1.7 percent for public schools.
    - Nonpublic secondary enrollment will decrease at an average annual rate of 0.9 per cent, compared with 1.2 per cent for public schools.
  - Total nonpublic elementary and secondary school enrollment will probably increase by 500,000 students by 1993.
    - Elementary enrollments will increase by 600,000, while secondary enrollments decline by 100,000 students.
    - The apparent nonpublic school enrollment surge between 1980 and 1985 could reflect actual enrollment growth or the results of improved survey coverage begun in 1983.
  - The ethnic diversity of private and parochial schools will not approximate that of public schools unless the income of minority populations increases.
  - Growing affluence will make private- or parochial-school education a more viable alternative for more families.
  - Enrollment in parochial schools is, however, expected to decline, while enrollment in private (nonchurch-related) schools increases.
- Private and parochial schools will remain more insulated from the educational policymaking of federal, state, and

local governments than public schools, although media and textbook selections by public schools will affect what is available to nonpublic schools.

Preschool Enrollments Will Grow Substantially.

- Enrollment in public and nonpublic preschools is expected to grow rapidly during the next five years.

  - Preschool enrollments will increase by approximately 957,000 through 1993, for an average annual growth rate of 1.9 percent, as shown in the following table:

Projected Growth Of Preschool Enrollments

Year	Public	Nonpublic	(Millions) Total
1970	2.981	1.298	4.279
1980	3.322	1.840	5.162
1985	3.865	2.339	6.204
1990	4.220	2.664	6.884
1993	4.358	2.803	7.164

Source: NCES, 1985

  - Public preschool enrollment will increase by approximately 493,000 and nonpublic enrollment will increase by approximately 464,000 students by 1993, yielding average annual growth rates of 1.5 and 2.3 percent, respectively.

  - The NCES data on preschool enrollments are based on a survey of households and include children age three to six enrolled in for-profit and nonprofit private schools and public schools with or without subsequent elementary grades.

- Dual-income families and single-parent families will continue to proliferate through the peak of the "echo boom," creating a demand for early education while parents work.

- As a larger proportion of family households become more affluent, preschool enrollments, which correlate with income, will rise as well.

- State involvement in funding and monitoring public and nonpublic preschools may increase as state influence in education policy grows generally.

Curriculum Decisionmaking Process

Participation In Local And State Curriculum Decisionmaking Will Diversify.

- As the number of households with at least one child under 18 grows through the next decade, the total number of parents of school-age children will also increase.
  - Public education will probably receive increased attention from the "baby boom" generation as it enters the age of community involvement (ages 30 to 50).
  - These "baby boomers," now parents of the "echo boom" generation, will become more vocal at the local level, and possibly at the state level, as their children enter elementary schools in large numbers during the next five years.
  - Because parents of the "echo boom" are generally more affluent and more vocal than their predecessors, their interests could dominate the local curriculum decisionmaking process.
  - Families of the "echo boom" are unlike traditional families of the past, however. More fragmented, with dual workers and single parents, they will have different needs and place different demands on the school system.
- The rapidly growing Hispanic and Asian populations in the U.S. will demand more participation in curriculum policy decisions during the coming decade.
  - Large urban areas and states with strong and growing minority populations -- such as Texas, California, New York, New Jersey and Florida -- will be the first to feel pressure.
- Increased public attention and personal involvement could lead to heated debates among parents of school-age children and older taxpayers over educational policy, particularly on issues with financial implications.

Current Participants Will Continue To Have Influence.

- Actors external to local school systems -- including textbook publishers, federal and state agencies, colleges and universities, test publishers, and independent foundations -- will continue to influence what is taught in schools.

- Textbook publishers will continue to play a dominant role in shaping the substance of the curriculum in most states.

  - Textbook publishers will continue to design their products in response to teacher needs and desires to facilitate acceptance and to sustain market demand.

    - Since teachers tend to avoid controversy and resist significant change and textbook publishers try to satisfy teachers, the publishers will continue to offer noncontroversial material that represents little change in content or approach.

  - Textbook publishers will continue to focus on large markets, such as Texas, California, Florida, and New York, and market materials that are successful in these states to the rest of the country.

- State boards of education and departments of education will play an increasingly important role in curriculum decisionmaking.

  - State education agencies will become increasingly active in the implementation of recently passed reform legislation.

    - State minimum competency testing requirements will have a direct influence on local curriculum planning.

- Test publishers will continue to influence curriculum content.

  - Test scores are a simple and highly visible measure of teachers', schools', and districts' performance.

  - Despite concerns about the limitations of test scores as measures of learning, focusing instruction to improve test scores will continue to be a politically expedient method for school districts to reduce public criticism.

- Colleges and universities that have been raising admissions standards and requiring prematriculation achievement tests will influence the college-bound curriculum of secondary schools.

  - State legislatures may try to coordinate state university admissions criteria with secondary school offerings.

- Foundations and associations will continue to exert pressure in specific areas of curriculum policymaking, although their effectiveness may require federal or state political endorsement or sponsorship.

- Although local school districts will retain ultimate control over curriculm implementation, their influence will weaken.

  - The trend toward district consolidation resulting in larger, more heterogeneous school districts will continue to erode the ability of districts' diverse constituencies to reach a broad consensus on curriculum policy issues.

  - Teachers will be strong participants in curriculum decisionmaking through their direct control of implementation in the classroom and their influence on textbook publishers.

    - State funds linked to the implementation of specific programs or performance results could increase conflict between state and local administrators and teachers.

Curriculum Content

<u>External Forces Will Continue To Drive Curriculum Reform.</u>

- Forces external to education will continue to have more influence over curriculum content than internal reform movements.

  - Popular issues and national or political "crises" will continue to affect schools more than schools will affect society.

    - The "issue attention cycle" in education that has witnessed curricular responses to Sputnik, civil rights movements, and global economic competition will continue as new issues gain and lose public attention.

The Tension Between Proponents Of Equity And Excellence In Education Could Intensify.

- Periodic shifts in curricular emphasis between equal opportunity and higher quality in education will continue. A rekindling of interest in equity issues is likely in the next few years.
  - The anticipated increase in affluent, well-educated families will fuel current interest in raising the quality of education.
  - At the same time, the anticipated increase in the number of minorities and immigrants entering public schools, especially in urban areas, will heighten interest in equal access to the high-quality education sought by the more affluent population.
- In the near term, the excellence movement will continue to be the dominant theme of reform legislation and educational rhetoric.

The Recent Emphasis On The Core Academic Disciplines And Basic Skills Will Continue, And The Definition Of Basic Skills Could Broaden.

- Due to the excellence movement, the expansion of the basic skills curriculum to include a greater emphasis on higher-order thinking skills, problem solving and analysis, real-world applications, and cross-grade articulation could continue, but institutional obstacles are significant.
  - Basic reading, writing, and mathematics skills development will continue to form the curriculum core, focusing on computational drill and rote memorization methods.
  - The application of basic skills through problem solving, analytical thinking, and simulation will become an increasingly important aspect of the curriculum as long as excellence and quality in education receive priority attention.
  - Teachers and school administrators may resist the "new basics," however, because they are more difficult, require retraining, and entail significant changes.

- Also, conservative parents and teachers will resist open-ended discussions involving alternative views on controversial topics -- meant to stimulate critical thinking.

- The specific subject areas taught in schools will probably not change during the next decade, although some shifts in emphasis may occur within them.
  - English and language arts will probably remain the mainstay of elementary and secondary school curricula.
  - Increased emphasis on mathematics, science, and possibly foreign languages may be expected in the next five years.
  - Students' exposure to these basic subjects may increase, on average, as more states adopt reform legislation and implement more rigorous requirements for high school graduation.
- The central objective and modularized format of comprehensive high schools will probably remain essentially unchanged during the next decade.
  - By 1990, the secondary school curriculum may also include different electives, more courses using computers, and a redirected vocational program that reflects the needs of the modern economy, but the overall curriculum will probably be essentially unchanged from what is offered today in comprehensive high schools.

Learners' and Intermediaries' Needs

<u>During the Coming Decade, Elementary And Secondary School Students Will Need Help Adjusting To Changes In The Family Structure, The Ethnic Diversity Of The Population, The Labor Market, and Technology.</u>

- A growing majority of children will need help coping with unusual emotional stresses and unsupervised time alone because of the changing structure of American families.
  - The growing number of single-parent families and remarried parents places more children in difficult emotional and psychological situations.

- Children from single-parent homes and families in which both parents work often become "latch-key kids," returning home to an empty house after school without supervision throughout the late afternoon.

    - Approximately 4 million "latch-key kids" exist today, and by 1990 an estimated 18 to 20 million children will spend part of their day unsupervised by a parent or other adult.

        - More "latch-key kids" will have gone to daycare centers and preschools because their mothers return to the labor force.

- The growing number of only-children may also have emotional problems, because they tend to be more adult-oriented than child-oriented.

- The growing size of the minority population will create a need for bilingual and intercultural education for all students.

    - Language-minority students will become a larger segment of the elementary and secondary school population, increasing the need for bilingual education.

    - The increasing ethnic diversity of the school-age population in a world made smaller through telecommunications creates a need for more intercultural awareness and understanding.

- The shift in the U.S. economy from an industrial and manufacturing-based system to an information-based system will require more analytical skills, technological awareness, and job flexibility.

    - Two thirds to three quarters of the new employees during the coming decade probably will need the mathematical, language, and analytical skills typically included in precollege curricula.

        - The general profusion of computers and information technologies in the workplace will require that employees at all levels feel comfortable with these technologies.

        - A March 1985 survey of 1,000 companies reported that lower-skilled workers are being replaced with higher-sklled workers due to increasing office automation.

- Students will need to prepare for life-long education and a working life that may require job or even career changes every ten years.

    - The "occupational half-life," the measure of how quickly 50 percent of the skills learned for a particular job become obsolete, is expected to be about five years during the next several decades.

- On the other hand, new incentives will be needed to keep students in secondary school classes, because many students will be subject to increasing economic and academic pressure to drop out of school.

    - As the entry-level labor pool (18- to 24-year-old group) declines by 4 million between 1985 and 2000, rising entry-level wages will become an increasingly attractive option for high school students.

        - One estimate suggests that entry-level wages could rise 20 percent by 1990 and 30 percent by 2000.

    - The increasing number of state-mandated competency or "exit" tests for high school graduation could, in fact, push the low-esteem, low-performers out of school before graduation.

- Increased home access to more varied programming and information through computer information links, cable television and videocassette recordings will require adults to pay greater attention to the programming children watch.

    - For unsupervised childen, the 3 p.m. to 6 p.m. hours are often spent watching television without parental guidance.

<u>Teachers, Schools, And States Will Need Greater Assistance In Planning For The Equitable And Efficient Use Of Technology And In Evaluating The Overall Effectiveness Of Education In An Increasingly Pluralistic Society.</u>

- As information technologies and computers become more common in the schools, the teachers will need extensive training in various programs and software.

    - Teachers need a more complete and instructive guide to

available media materials and software and their possible applications to the curriculum.

- Teachers need an instructive guide on the application of business and management software to course administration and computer use by students.

- Teachers also need better information about the strengths and weaknesses of the various information technologies.

- School districts will need more assistance with the growing need for improving the effectiveness and efficiency of their teachers and for evaluating fairly a more heterogeneous student population.

  - Faced with more students, shrinking revenues, and possibly fewer teachers, local school administrators will need to provide teachers with more effective and efficient administrative and instructional tools.

  - Schools may receive more public attention and support from "echo boom" parents during the coming decade, but school administrators will still be held accountable for student performance even as it becomes increasingly difficult to measure.

    - Student grades in classes and on standardized tests will be more difficult to evaluate as the student body becomes more ethnically diverse.

- State departments and boards of education will need to confront the problem of inequity in student access to information and technology.

  - Students from more affluent homes attending, wealthier schools have better access to information technologies as computers, cable television, and VCRs become more prevalent in those schools.

Market For Educational Materials

<u>The Overall Market For Educational Materials During The Next Decade Will Be Characterized By The Continued Dominance Of Print Media, But Increases In Personal Computers And VCRs Are Expected.</u>

- Technology will expand the variety of media and information resources available to the school-age

population, but textbooks and print media are expected to remain the dominant instructional materials in elementary and secondary education during the next decade.

- Teachers will continue to rely on textbooks, workbooks and other print materials for the core of classroom instruction and homework.

- Sales of textbooks and supplemental print media will probably increase during the late 1980s and early 1990s as enrollments increase.

    - Most increases will probably occur in sales to elementary schools.

- Nonprint media will remain supplemental to the text-oriented curriclum in the vast majority of schools.

    - Teachers who do use nonprint media will continue to insist on ease of use, control, and relevance to the curriculum.

    - Teachers may prefer using a text series with complementary print and nonprint products to reduce their course preparation time.

    - The availability and sales of personal computer courseware is expected to grow. Recent forecasts of this market, however, may be overly optimistic.

        - One observer has predicted that the educational courseware market will exceed $1 billion by 1987 and will surpass textbook sales by 1990. This observor further asserts that 75 percent of courseware will be purchased by households.

        - But existing obstacles -- such as high development costs, long lead times, and copyright infringements -- will continue to be significant barriers to exponential growth of this market.

    - The growth of the personal computer hardware market in schools is expected to continue throughout the next decade.

        - The rate of growth may be slower in the shortterm as schools and individuals absorb currently installed equipment.

        - Ninety-five percent of schools probably will have personal computers by 1995.

- The number of pupils per computer is expected to fall to ten by 1995.

Projected Number of Students Per Computer

Year	Elementary And Secondary Students Per Personal Computer
1982	309
1983	212
1985	75
1990	25
1995	10

Source: Institute for the Future, 1985, and Quality Education Data

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- VCRs in schools will probably follow the home market and exhibit the fastest growth of nonprint media during the next few years.

  - Ease of use, flexibility, and declining cost are stimulating the growth of the VCR market.

  - California's funding support for school acquisition of standardized half-inch, VHS-format VCRs could solidify a trend that will encourage schools in other states to follow suit.

  - Growing teacher familiarity with the utility of VCRs through home use contributes to the continued expansion of VCR purchases by schools.

- Broadcast and cable television use for instruction probably will decline as VCRs are used to record programming for students' viewing at convenient times.

- The market for filmstrips and films is expected to remain large, but will decline in relative size as software and video tape sales increase.

  - VCRs will probably not replace 16mm films or filmstrips for many applications in the next five to ten years.

    Films are still the preferred medium for presentations to large audiences.

Less affluent school systems will continue to use filmstrips as an inexpensive enhancement of print materials.

- Extensive film and filmstrip libraries, investments in equipment, and user familiarity will contribute to the resilience of this segment of the market.

- Videodisc systems, interactive videodisc, compact discs, direct broadcast satellite, and artificial intelligence "expert" programs probably will not be purchased extensively by schools in the next ten years.

  - In the near term, the advantages of these systems probably will be outweighed by high cost, limited availability of programs, and the inability to record material on discs locally.

<u>The Overall Structure And Organization Of The Market For Educational Materials Will Remain Intact, But The Market Will Reflect Increasing Conservatism In The Schools.</u>

- The marketplace will remain concentrated in a small number of school districts and states that will be the focus for commercial producers of educational materials.

- The process for purchasing educational materials may become increasingly conservative and slow.

  - The gradual escalation of educational policy and decisionmaking from the local to the state level will yield an increasingly complicated bureaucracy.

  - Further district consolidations and the growing pluralism of society will make it more difficult for school districts and states to form a consensus.

  - The risk of technological obsolescence may restrict school districts to purchases of only the most reliable media and technologies.

- The process for producing educational materials will remain slow to respond to the changing needs of teachers and students.

  - It can take several years to design, develop and

introduce a new textbook, software program, or film.

- Producers are increasingly more hesitant to enter new markets, because many have found once-promising areas unprofitable.

<u>As Information Technologies And Computers Are Applied To Education, Their Presence In The Schools And Curriculum May Make Them Less Vulnerable To Budget Cuts.</u>

- The introduction of computers and new media can physically alter school facilities. Also, new constituencies in education can encourage permanent adoption of media and technology.

- State support for school district purchases of computers, VCRs, or other information technologies further protects them from budget cuts.

<u>The Production And Distribution Of All Educational Materials Will Be Dominated By Textbook Publishers Seeking Profitable Markets.</u>

- Textbook publishers will continue to dominate the market for educational materials as they expand into courseware and other nonprint media.

  - Increased competition for a growing market will lead publishers to offer supplemental print and nonprint materials to their product lines.

    - Nonprint media design and production expertise may be developed internally or acquired through mergers.

  - Software producers will probably concentrate on the more lucrative business and home markets, while pursuing educational software development projects in collaboration with publishers or hardware manufacturers to defray costs and risks.

    - The educational software market has not been profitable for many producers.

    - Nonstandardized hardware, long lead times for development, high design and development costs, and the threat of software piracy will continue to limit innovation and risktaking by software developers.

  - Technology will allow small producers to create

professional video films for local home and school consumers, but large producers will retain the dominant share of this growing segment of the education market.

  - Production costs for videotape are higher than for 16mm film, making it cheaper to film in 16mm and then to transfer to videotape for dissemination.

  - The threat of piracy could be an obstacle from the producers' viewpoint to growth of the VCR market.

- Most producers and distributors of educational materials will be private-sector firms whose main goal is long-term profitability.

  - To ensure sales, producers will continue to focus on the large-enrollment states, studying the needs and demands of state education agencies.

    - Products accepted by large states will be marketed throughout the country.

- The distribution of educational material may gradually incorporate more electronic transmission of video programming, software, and administrative information.

  - Personal computers used for administrative functions will be capable of transferring software or perishable information via modem link rather than via bulk delivery from a central distribution center.

<u>Computers In Schools Gradually Will Be Used More As Problem Solving Tools And For Administrative Tasks And Less As Instruments For Direct Instruction.</u>

- Economic considerations support the move from traditional courseware to applications packages such as word processing and spreadsheet software.

  - Courseware designed for each subject and grade is costly to develop and purchase.

  - Applications software packages are not limited by grade or subject and, therefore, are more flexible.

    - Since the cost of an individual applications program can be spread over a larger market, prices should be lower.

- In the next few years, the predominant use of computers in schools probably will be to mimic existing patterns of instruction.

    - Drill and practice courseware and workbook-style programs will continue to account for a large share of available courseware.

- By 1990, however, computer use probably will expand beyond educational courseware for direct instruction to greater use of existing business and management software as tools for problemsolving.

    - Less emphasis on computer programming and more on business applications packages is evident in postsecondary institutions.

    - Instructional courseware still will be needed for elementary students, but secondary students probably will be exposed to more word processing, database management, spreadsheet, and statistical packages.

- Computers also will become a more important management tool for school administrators and teachers.

    - The administrative use of computers will be more decentralized within-school use of personal computers integrated with other schools and central district systems.

    - Teachers probably will use computers more for maintaining and researching student records and planning courses.

        - Teachers already spend more time administering than teaching and are generally eager for ways to alleviate administrative burdens.

    - Integrating administrative and instructional use of computers will be hindered by data storage limitations, concerns about security of student and school records, and delayed responsiveness of a central computer with simultaneous administrative and instructional functions.

<u>The Home Could Become An Increasingly Important Market For Educational Materials.</u>

- The household market for nonprint educational materials will remain dominated by television, although the

opportunities for a broader range of media will increase as households obtain more computers, VCRs, and cable television channels.

- The young audience for educational programming in the home will grow during the next ten years as the "echo boom" peaks.

- The changing family structure and the increase in "latch-key kids" could create larger demands for computer, cable, and broadcast educational programming in the home.

    - The anticipated growth in VCR sales will remove scheduling obstacles for home viewing just as it will for schools.

- If schools respond to this need with before- and after-school informal learning programs for "latch-key kids," the home market for educational programming could be displaced.

THE MOST PROMISING SUBJECTS FOR NEW PRODUCTIONS

This study of the market for media-based educational materials for preschool to high school through 1990 was commissioned by CPB to inform learning technologies professionals about the markets that show the greatest potential for their products in schools.

The analyses performed in this study suggest nine general market areas of opportunity based on the current education market, the trends that will affect the market, the projected effects of those trends and existing and anticipated learners' needs. The market opportunities include --

- Bilingual education;
- Basic skills and applications;
- Science education;
- Social studies education;
- Vocational and career education;
- Preschool education;
- Health and social issues education;
- Fine arts education; and
- Foreign language education.

The last four of the nine market opportunities above show either lower promise than the other five or already have been well served by public broadcasting.

Preschool education is already one of the great successes for public broadcasting.

Health and social issues education has low priority in schools; the subject matter can be controversial and lacks adequate funding. Also, public television has produced a number of programs on health and social issues that could be used.

Fine arts education is a small, low-growth market with low use of media and technology. Also, public television has done some outstanding arts productions in the past (e.g., Arts Express, and Big Bird at the Metropolitan Museum of Art) and currently has a new series in production.

Foreign language education is dominated by textbooks, workbooks, language labs, audio tapes and computer software.

A summary of the five remaining market opportunities -- bilingual education, basic skills, science education, social studies education, and vocational and career education, is defined by learning and teaching needs, the advantages of media-related learning resources, and the presence of competitive resources that will work as well or better, such as textbooks or other productions.

These areas of opportunity should be considered carefully to position public broadcasting as a significant resource within the education community over the next five years. Of course, many producers will also continue to serve specific local or immediate needs in their community, many of which will be at odds with these findings.

Funders, producers, stations or schools, armed with this information, however, should be able to set priorities for the commitment of limited national resources so that new productions (of a more-than-local nature) will have the greatest likelihood of use and effectiveness.

A limited number of copies of the full two-volume market study are available from CPB's Office of Corporate Communications. The titles of the two lengthy volumes are --

Volume 1: Situational Assessment of the Market for Media-based Learning Materials and Services

Volume 2: Strategic Analysis of the Market for Media-based Learning Materials and Services

Call CPB's Office of Corporate Communications (202) 955-5167 for more information. Ask for the Cresap, McCormick and Paget market study.

SUMMARY OF MARKET OPPORTUNITIES FOR PUBLIC BROADCASTERS BY CURRICULAR AREA & TARGET GRADE LEVEL

Bilingual Education -- Elementary

Advantages and Disadvantages of Media and Technology

- Advantages:
  - Skill development
  - Visual presentation
- Disadvantages:
  - High production costs

Market Dimensions

- Total potential school and home market = 2.4 million with limited English proficiency
- Target school market: 1.16 million Hispanics with limited English proficiency
- Less than $4 million available for all instructional materials in target market

Competition

- Little private competition due to limited funds and diverse instructional methods

Obstacles, Risks, Incentives

- Incentives:
  - High growth rate of population
  - Scarcity of high quality
  - Lack of qualified teachers
  - Increasing state and local commitment
- Risk: Increasingly controversial
- Obstacles:
  - Hardware scarcity
  - Lack of teacher training in materials use

Summary Observations

- Small, high-growth market
- High level of geographic concentration

SUMMARY OF MARKET OPPORTUNITIES FOR PUBLIC BROADCASTERS BY CURRICULAR AREA & TARGET GRADE LEVEL

Science Education -- Junior High, High School

Advantages and Disadvantages of Media and Technology

- Advantages:
  - Demonstrations
  - Simulations
  - Lab experiments
  - Discovery learning
  - Problem solving
- Disadvantages:
  - High production cost

Market Dimensions

- Large, growing elementary and intermediate population
  - 28.2 million students by 1993
- Limited time and funds, grades 1-8
  - $62.4 million for print materials and kits
  - $12 million for prepared A-V materials
- Large, low-growth secondary population
  - 8 million students in science classes
- High school expenditures
  - $73.6 million for print materials and kits
  - $14 million for prepared A-V materials

Competition

- Highly competitive market
  - 11% of publishers' sales
  - Major publishers dominate
  - NSF a major sponsor

Obstacles, Risks, Incentives

- Incentives:
  - Curriculum and materials needs
  - Teacher shortages
  - Science a priority
- One of most promising media (videodisc) has high risks:
  - New ITV market (secondary schools)
  - New technology
  - High costs
  - Uncertain acceptance

Summary Observations

- Opportunities exist at elementary and secondary levels
- Highly competitive

SUMMARY OF MARKET OPPORTUNITIES FOR PUBLIC BROADCASTERS BY CURRICULAR AREA & TARGET GRADE LEVEL

Social Studies Education -- Junior High, High School

Advantages and Disadvantages of Media and Technology

- Advantages:
  - Attention-getting power
  - Ability to cover broad subjects
  - Computers' ability to reinforce knowledge and access information
- Disadvantages:
  - Limited interaction

Market Dimensions

- Large, high-growth enrollments
  - 15 million enrollments in secondary courses (2.5% annual growth rate)
- Expenditures for materials are high, but low growth
  - Textbooks: $49.1 million elementary, $48.3 million secondary
  - A-V materials: $8.6 million elementary, $8.5 million secondary

Competition

- No market leaders
  - Wide range of text and materials in use
- Large number of films and videotapes are in social studies
- Most courseware is for elementary and junior high and concentrates on geography, demography, and American history

Obstacles, Risks, Incentives

- Incentives:
  - Extensive state requirements
  - Interdisciplinary possibilities
- Risk: shifts in public opinion
- Obstacles:
  - Teacher resistance to media use
  - Low levels of perceived need

Summary Observations

- Materials market is sizeable and relatively risk-free, but competitive
- Media and technology are applicable, but face significant obstacles

SUMMARY OF MARKET OPPORTUNITIES FOR PUBLIC BROADCASTERS BY CURRICULAR AREA & TARGET GRADE LEVEL

Basic Skills -- Elementary
(Especially Math & English)

Advantages and Disadvantages of Media and Technology

- Advantages:
  - Attention-getting power
  - Capabilities to improve skills
- Disadvantages:
  - High costs
  - Limited access to equipment and software

Market Dimensions

- Large, high-growth elementary market
  - 31 million students, K-8 (33.5 million by 1990)
  - Textbooks: $607 million for English/language arts and math
  - A-V materials: $106 million
- Most time on English/language and math at elementary level
- Large, high-growth secondary enrollments
  - 4 million students in remedial programs
- Small, high-growth secondary expenditures
  - Textbooks: $22 million in English, $61 million in math, $9 million in remedial English, $20 million in remedial math
  - A-V materials: $1.6 million for English, $6.1 million for math

Competition

- No textbook series dominates market
- Materials are highly similar

Obstacles, Risks, Incentives

- Incentives:
  - Increasing minimum competency testing
  - Growing need for improved communication
  - Basic skills is a perceived need
  - Acute teacher shortages
  - Little implementation of broadened basic skills
- Obstacles:
  - Low student interest
  - Teacher resistance to more rigorous skills
  - Public bias against using television

Summary Observations

- Large and growing materials market
- Widely acknowledged need
- Media and technology applicable, but face obstacles

SUMMARY OF MARKET OPPORTUNITIES FOR PUBLIC BROADCASTERS BY CURRICULAR AREA & TARGET GRADE LEVEL

Vocational and Career Education -- Junior High, High School

Advantages and Disadvantages of Media and Technology

- Advantages:
  - Ability to manipulate time and space
  - Demonstrations
  - Simulations
  - Ability to make available larger amounts of career information
- Disadvantage:
  - Cannot replace hands-on skill training

Market Dimensions

- Large but shrinking student population
  - 3.7 million students; 65,000 teachers; 17,000 institutions
  - 3-6% annual enrollment decline
- Enrollments will continue to decline due to secondary declines and increasing academic requirements
- Career education enrollments large but declining
- Expenditures are large, high-growth
  - $153.1 million for textbooks (1/3 of all high school sales)
  - $27 million for A-V materials

Competition

- Market is competitive, especially in business education
- Wide variety of profit and nonprofit providers

Obstacles, Risks, Incentives

- Incentives
  - Large constituency groups
  - Possibilities for collaboration
  - Need for career education materials
  - Increasing openness to new, improved vocational education programs
  - Opportunities for media and technology to substitute for expensive equipment
- Obstacles:
  - Increased emphasis on academics
  - Difficulties in product development and use

Summary Observations

- Enrollments will continue to decline
- Market demand for materials will increase
- Significant opportunities, but major obstacles